The built environment

Building safer environments: injury, safety, and our surroundings

M Stevenson

Better urban planning could contribute significantly to injury prevention

In response to the burden of injury, an array of countermeasures which focus on the prevention of injury and the promotion of safety has been developed. These countermeasures range from interventions that require individuals to actively change behaviors, through to countermeasures that require no action by the individual intended to be protected by them. The latter countermeasures are generally those that are integrated into the ''environment''.

There is a growing body of literature that examines the influence of the built environment and in particular neighbourhoods on health outcomes such as cardiovascular disease,[1] respiratory illness,[2] and low birth weight.[3] Despite an increased understanding of the relation between the built environment and these health outcomes, scant attention is paid to the health outcomes that could be achieved if safety/injury prevention was a leading priority in the design of built environments.

SAFETY AND THE BUILT ENVIRONMENT

There is little debate that the built environment needs to be safe, accessible, and vibrant. Specific countermeasures directed at changes to the built environment could contribute, significantly, to reduced rates of injury. For example, a number of environmental features have been reported to increase the risk of pedestrian injury in children. Features such as the absence of play areas and the presence of kerbside obstacles such as telephone booths have been found to increase the frequency of child pedestrian injury.[4] An Australian study reported that 78% of injured child pedestrians resided on streets or in neighbourhoods that had no appropriate recreational facilities such as a park.[5] There are also numerous studies that show the potential for reducing child pedestrian injuries by limiting the volume and reducing the speed of traffic.[4–6] Importantly, the evidence suggests that reducing a child's exposure to roads with high volumes of traffic could result in a reduction in pedestrian injury of up to 30%.[6] Reductions of this magnitude highlight the benefits that could be achieved by modifying the built environment.

Clearly, it is not sufficient to think solely of the built environment in terms of its role in preventing injury but rather the broader role it can play in influencing safety related behaviors. There is now wide acceptance that there is a relation between the design of urban space and public behavior including violence.[7]

There are two well described approaches to the safety debate in the built environment—namely the ''enclosure'' and ''encounter'' models.[8] The former is characterised by the treatise that violence could be prevented by taking control over the urban space, and enclosing the zone, while the latter, the ''encounter'' model, argues that safety is a function of the volume of street life and by default, the general public act as a safety measure. To date, public policy relating to the built environment and urban space attempts to strike a balance between the two.

Safety must be paramount in the design of the built environment and there is evidence to suggest that the ''encounter'' model can provide greater levels of urban safety and is likely to be sustainable. However, despite the evidence, the ''enclosure'' model continues to be embraced and as critics of the model purport,[8] those who have invested in private safety are unlikely to also fund public safety. This is certainly borne out by the fact that when individuals have few social resources, little attention is paid to identifying problems that have relevance to the common good.[9] Change in urban environments in relation to road traffic injury for example, have only come about when homogenous groups such as school and parents associations have taken action, as a collective.[9]

BARRIERS TO DESIGNING SAFETY INTO THE BUILT ENVIRONMENT

Integrating safety into the built environment requires partnership between government, industry, non-government organizations, community groups, and individuals. Importantly, it requires institutions and agencies to make a shift from the status quo. There is always the tendency for institutional inertia and effort is needed to ensure governments move towards adopting strategies that place safety and the built environment as a priority. Examples such as those in Curitiba, Brazil—where priority was placed on public transportation systems, integration of bicycle paths, and pedestrian areas—have resulted in reduced use of cars, greater pedestrian activity, reduced pollution, and environments that are safer.[10]

The success in Curitiba was achieved by public decision making that was not based on short term outcomes. One of the barriers to promoting safety in the built environment is that political decisions tend to focus on issues that require action today or in the short term. It is important therefore, to set short term goals that link to a long term strategy that places safety and other health outcomes as a priority in the development/design of the built environment.

A further barrier is the low level of public awareness surrounding solutions for injury prevention and safety, particularly those that can be integrated within the physical environment. The low level of public awareness is also combined with a commonly held belief that injury is a chance occurrence and falls into the realms of fate. Until such time as communities are aware that injuries occur because of failures in a system, and that the built environment is an integral part of that system, safety advocates will continue to be lone voices.

CONCLUSION

Much of what has been highlighted in this editorial are key principles advocated under an EcoCity approach whereby cities, towns, and villages are designed to enhance the health and quality of life of individuals and importantly, to maintain the ecosystems on which they depend.[11] The EcoCity approach integrates numerous concepts of which safety is one. It advocates cities built for safe pedestrian and non-motorized transport use (including low cost public transport) along with safe homes. Importantly, however, it promotes a systems approach in which safety (along with the other elements) is integrated within urban planning.

With injury as one of the leading causes of death and with the potential for changes to the built environment that could contribute, significantly, to a reduction in injury, it is urgent that safety/injury prevention is placed on the agenda of decision makers with responsibility for the built environment.

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Health policy

Governmental health agencies need to assume leadership in injury prevention

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Injury prevention must be recognized as a priority health issue

Although the major burden of injury is borne by the healthcare delivery system, the identification and implementation of solutions is often beyond its direct control. Notwithstanding this, there are clear opportunities for governmental health agencies to assume preventive leadership and to engage other sectors in reducing this public health burden.

Injury has been well recognized by a variety of lead agencies internationally as one of the biggest challenges facing public health today.[1 2] The acute care needs and burden on hospital service delivery far exceed that of all infectious diseases combined. No other health condition has such far reaching ramifications for future poor health, the economy, or national healthcare budgets. Despite this, many governmental health agencies do not assume adequate leadership in injury prevention.

Injury prevention is particularly challenging because, although the major burden is borne by governmental health agencies, the identification and implementation of solutions is often beyond their direct control. For example, getting drivers of vehicles to wear properly designed seatbelts to prevent road injury has largely been achieved by the road sector. It is unfortunate that, on the whole, governmental health agencies today have little to say about the impact of the policy decisions of other sectors on injury rates.

This paper highlights how the magnitude of the injury epidemic will escalate unless leadership is adopted by governmental health agencies. Challenges and opportunities for governmental health agency leadership in reducing the magnitude of this burden are presented.

MAGNITUDE OF THE INJURY BURDEN

In developed countries, injury is the leading cause of death in people aged <45 years. Accordingly, it is the single highest contributor to premature mortality and years of potential life lost of any health condition. Its incidence and burden in developing countries is also increasing. But injury does not only kill young people. On an age specific basis, injury mortality rates can be highest in older people. According to the World Health Organization, by 2020 injury will be the first or second leading cause of years of life lost globally.[3]

There has been a suggestion that increased performance of injury retrieval and management practices has contributed to a reduction in mortality since the 1980s. However, with much of the focus of health service delivery being to prevent death alone, the number of people with permanent disability or impairment following injury is likely to increase as the burden is shifted from mortality to those with long term care needs for permanent disabilities or incapacity (for example, permanent brain or spinal cord damage).

The burden of injury is not only experienced through death and hospitalizations. Indeed, minor injury (non-hospital treated cases) is one of the major causes of general community morbidity—especially when general practitioner and allied health consultations are considered.[4]

PROJECTED INJURY TRENDS

If governmental health agencies do not invest in injury prevention, and the level of attention to injury prevention in other government agencies is maintained at its present low levels, the following trends, based on data from NSW Australia, could be expected.

1. *The rate of injury mortality is likely to stabilize.* There is some evidence that this stabilization has begun in NSW: in 1983–87, the age adjusted death rate was 50/100 000; in 1988–92, it was 46/100 000; in 1993–97, 39/100 000; and in 1998–02, 39/100 000. As the population ages, however, the crude rate of injury deaths will increase.

2. *The rate of injury hospitalizations is likely to increase*. Figure 1 projects the number and age adjusted rate of injury related hospital separations for NSW, Australia for the period 2001–26. The major influence on the number of projected injury hospitalizations will be admissions for falls and associated fractures, which will be strongly affected by population ageing.

What should governmental health agencies be doing?

Actions needed to address the key drivers of injury incidence and to mitigate their likely effects include:

1. *Providing adequate resources and incentives for prevention rather than acute care.* The current focus on acute health services delivery is a major barrier towards injury prevention. For example, providing better treatment of spinal cord injuries does not reduce the number of people who sustain a catastrophic neck injury in the first place.